

Amendments to the Claims:

No claims have been amended herein. Please note that all claims currently pending and under consideration in the referenced application are shown below. Please enter these claims as amended. This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Original) A semiconductor card comprising:
a printed circuit substrate having a circuit side, a back side and a peripheral substrate edge with front and back edge corners, the substrate including a plurality of conductors on the circuit side and a plurality of external contacts on the back side in electrical communication with the conductors;
at least one semiconductor component on the circuit side in electrical communication with the conductors;
a plastic body molded to the circuit side and extending laterally from the peripheral edge to form a card having a front face and a back face with a smooth card edge connecting said faces, said plastic body encapsulating the semiconductor component and conductors while leaving external contacts exposed; and
a plurality of narrow ends of connecting segments of the substrate intersecting with a peripheral edge and exposed therein.

2. (Original) A semiconductor card in accordance with claim 1, wherein the back side of said substrate is substantially exposed.

3. (Original) A semiconductor card in accordance with claim 1, further comprising a cut central portion of said card edge intermediate and separated from the peripheral edges along the front face and back face.

4. (Original) A semiconductor card in accordance with claim 1, wherein said back face is substantially continuously planar.

5. (Original) A semiconductor card in accordance with claim 1, wherein said substrate comprises a printed circuit board.

6. (Original) A semiconductor card in accordance with claim 1, wherein said card has a thickness of about 1 mm to about 6 mm.

7. (Original) A semiconductor card in accordance with claim 1, wherein said substrate has a thickness of about 0.2 to about 1.6 mm.

8. (Original) A semiconductor card in accordance with claim 1, wherein said substrate comprises a reinforced organic polymer resin.

9. (Original) A semiconductor card in accordance with claim 1, wherein the plastic body comprises a Novoloc epoxy resin.

10. (Original) A semiconductor card in accordance with claim 1, wherein said at least one semiconductor component comprises flash memory.

11. (Original) A semiconductor card in accordance with claim 1, wherein said card comprises a memory card for digitally recording and retrievably storing photographic data in a digital camera.

12. (Original) A module for forming a semiconductor card with a card outline, said module comprising:
a strip of planar insulating material having a circuit side and a back side;

a peripheral opening defining the outer edge of a substrate and the inner edge of a frame, said opening having an inner edge inside of the card outline and an outside edge outside of the card outline; and
a plurality of connecting segments of said strip connecting said substrate to said frame, said connecting segments configured for forced movement to a level different from the frame, wherein said substrate, frame, opening and segments comprise said module.

13. (Original) A module in accordance with claim 12, wherein the width of said peripheral opening adjacent connecting segments is enlarged to elongate said segments.

14. (Original) A module in accordance with claim 12, wherein said connecting segments connect the substrate to the frame on opposing sides thereof.

15. (Original) A module in accordance with claim 12, wherein said strip of planar material comprises a printed circuit board.

16. (Original) A module in accordance with claim 12, wherein said substrate has a thickness of about 0.2 to about 1.6 mm.

17. (Original) A module in accordance with claim 12, wherein said substrate comprises a reinforced organic polymer resin.

18. (Original) A transfer mold assembly for forming a semiconductor card with peripheral card edges from a planar module having a peripheral opening defining a substrate therein, said opening interrupted by a plurality of narrow module segments, said assembly comprising:

a first plate having a first molding surface for contacting the back side of a planar module;
a second plate having a second molding surface for contacting the circuit side of the planar module;

an internal molding cavity comprising portions of the first and second molding surfaces;

Apparatus for injecting fluid molding compound into the internal molding cavity;
peripheral molding structures defining lateral edges of a semiconductor card body, said molding structures having a plurality of slits for downward passage of said module segments;
a plurality of internal molding cavity portions comprising wing cavities projecting outwardly from the peripheral molding structures; and
a plurality of throughholes in the second plate, said throughholes aligned with the module segments outside of the peripheral molding structures.

19. (Original) A transfer mold assembly in accordance with claim 18, further comprising:
a plurality of down-set pins insertable in said throughholes to motivate module segments and substrate attached thereto downwardly from the frame to a lower position against a cavity surface, said throughholes positioned to pass through said wing cavities outside of said peripheral molding structures.

20. (Original) A method for fabricating a semiconductor card, comprising:
providing a strip comprising a module with a peripheral opening defining an internal substrate and an external frame, and a plurality of connecting segments connecting the substrate to the frame, the substrate comprising a circuit side having a circuit thereon and a back side having external contacts thereon;
mounting at least one semiconductor component to the circuit side in electrical communication with the external contacts;
installing the strip in a molding assembly having a molding cavity with internal surfaces in first and second mold plates and wherein the substrate is forcibly moved to a level differing from the level of the frame;
molding a plastic body on the circuit side of the substrate, said body including edge portions of the card formed laterally outwardly from the substrate, and a plurality of wings extending laterally outwardly from said edge portions; and
removing the molded casting from the molding assembly and singulating the card from the wings by excision.

21. (Original) A method in accordance with claim 20, wherein the substrate is moved to a level at which the back side thereof abuts a surface of the molding cavity.
22. (Original) A method in accordance with claim 20, wherein said substrate is moved a distance of about 0.2 - 3 times the substrate thickness.
23. (Original) A method in accordance with claim 20, wherein said substrate is moved by movement of pins passing through down-set throughholes in said molding assembly and wings to contact, move and clamp the connecting segments attached to the substrate.
24. (Original) A method in accordance with claim 20, wherein portions of said peripheral opening adjacent the outer ends of said connecting segments are elongated laterally outward to lengthen said connecting segments.
25. (Original) A method in accordance with claim 20, wherein said frame is connected by connecting segments to the substrate on opposing edges thereof.
26. (Original) A method in accordance with claim 20, wherein said molding step encapsulates the circuit side of the substrate and leaves the external contacts uncovered.
27. (Original) A method in accordance with claim 23, wherein the molded casting is removed from the molding assembly by inserting pins into the down-set throughholes to eject the molding thereby.
28. (Original) A method in accordance with claim 23, wherein the molded casting is removed from the molding assembly by further insertion of the down-set pins through the down-set throughholes to eject the molding thereby.

29. (Original) A system for forming a semiconductor card having a card periphery, comprising:

a planar module having a substrate formed therein by a peripheral opening surrounded by a frame;

a plurality of segments of the module connecting said substrate to said frame;

a transfer mold assembly comprising:

a first plate having a first molding surface for contacting the back side of a planar module, said first plate having a peripheral raised portion with a plurality of slits for passage of module segments therethrough;

a second plate having a second molding surface for contacting the circuit side of the planar module;

an internal molding cavity comprising portions of the first and second molding surfaces;

means for injecting fluid molding compound into the internal molding cavity;

peripheral molding structures defining lateral edges of a semiconductor card body;

a plurality of internal molding cavity portions comprising wing cavities projecting outwardly from the peripheral molding structures;

a plurality of throughholes in the second plate, said throughholes aligned with the module segments outside of the peripheral molding structures; and

a plurality of down-set pins insertable in said throughholes to motivate module segments and substrate attached thereto downwardly from the frame to a lower position against a cavity surface, said throughholes passing through said wing cavities outside of said peripheral molding structures.

30. (Original) A system in accordance with claim 29, wherein said module comprises one of a set of modules on a strip insertable into a molding assembly for simultaneous molding.

31. (Original) A system in accordance with claim 29, wherein said molding assembly comprises a transfer mold.

32. (Original) A system in accordance with claim 29, wherein said plurality of connecting module segments comprises four segments.

33. (Original) A system in accordance with claim 29, wherein the peripheral opening has a width which is increase adjacent the outer ends of said module segments.

34. (Original) A system in accordance with claim 29, further comprising ejection pins insertable into said throughholes to eject said casting from said molding assembly.